

REMARKS

This application has been reviewed in light of the Office Action dated August 16, 2007. Claims 1, 2, 6-8, 12-14 and 16 are presented for examination, of which Claims 1, 6, 8, 12 and 14 are in independent form. Claims 1, 6-8, 12-14 and 16 have been amended to define still more clearly what Applicant regards as his invention. Claims 3-5, 9-11 and 15 have been cancelled without prejudice and disclaimer of subject matter, and will not be mentioned further. Favorable reconsideration is respectfully requested.

In the outstanding Office Action, Claim 16 was rejected under 35 U.S.C. § 101 as being allegedly directed to non-statutory subject matter. Without conceding the correctness of this rejection, Applicant has rewritten this claim in the manner suggested by the Examiner to eliminate this as an issue. Accordingly, withdrawal of this rejection is respectfully requested.

Claims 8, 13 and 14 were rejected under 35 U.S.C. § 102(b) as being anticipated by U.S. Patent 6,151,457 (Kawamoto), and Claims 1, 2, 6, 7, 12 and 16 were rejected under 35 U.S.C. § 103(a) as being obvious from *Kawamoto* in view of U.S. Patent 4,413,275 (Horiuchi et al.).

The present invention has as its object to store image data in a memory of a printing apparatus which prints color images, and to do so at a ratio based on the code amount of the encoded data for each color component of the image actually to be printed. The printing apparatus is permitted to print only when all color components for a given pixel exist. Consequently, for example, due to constraints on memory capacity, it was conventionally possible to store in the printing apparatus memory the entire encoded data of the Y and M components of the image to be printed, but if only a certain amount of the

remaining C color component could be stored, it was necessary to carry out print processing by using those pixel data for which all color components can be decoded and printed at that time. Doing so would produce an empty area, permitting the apparatus to receive successive code data of the C component. In other words, Y and M component data already stored in memory cannot be used in print processing until the remaining C component is received.

Using the present invention, in contrast, when encoding image data to be printed, the information processing apparatus requests the ratio of encoded data amount, notifies a printing apparatus of the requested ratio, and causes memory area storing each color component data according to that ratio to be secured. As a result, in the printing apparatus, each color component encoded data is stored in a memory area the size of which is based on the encoding ration for that color component.

Also, in a case where all of the encoded data of all color components of one page's worth of images cannot be stored, the remaining color component data must be stored as empty area is generated in the printing apparatus memory. Because data stored in the printing apparatus is encoded data, it is not assured in this situation that all color components of a given pixel are present in memory at a given time. Using the present invention, however, the number of pixels for which all color components *are* present becomes much larger than before, and the above problem is solved, or at the very least, is mitigated.

Independent Claim 1 is directed to a printing system including an information processing apparatus that outputs print data and a printing apparatus that receives the print data from the information processing apparatus and prints a color image

on a sheet. According to Claim 1, the information processing apparatus comprises storage means, for storing a plurality of tables for defining a set of dither matrix patterns used for character/line image and halftone image for each color component, and designation means, for designating a table among the plurality of tables. Generation means are provided, for generating image data for respective printing color components of an image based on data to be print-outputted delivered from higher processing and quantizing the generated image data for respective printing color components using dither matrixes specified by the table designated table. Coding means compress-encode the quantized image data for the respective printing color components generated by the generation means, and notification means predict coded data amounts for the respective printing color components based on the table designated by the designation means and the sizes of halftone image areas and character/line image areas included in the image to be printed, and generate memory allocation ratio information based on a ratio of the predicted coded data amounts for the respective printing color components coded by the coding means. The notifying means also notify the printing apparatus of the memory allocation ratio information. Also provided are output means, for outputting the image data for the respective printing color components coded by the coding means to the printing apparatus.

Also, according to Claim 1, the printing apparatus comprises a reception buffer to store, temporarily, the image data for the respective printing color components outputted by the output means, and plural decoding means, independently provided for the respective printing color components, for decoding coded data to image data. The printing apparatus also comprises means for setting sizes of the reception buffer allocated for the

respective printing color components, in accordance with the memory allocation ratio information.

Among other notable features of an apparatus according to Claim 1, therefore, are the notification means, which are for “predicting coded data amounts for the respective printing color components based on the table designated by said designation means and the sizes of halftone image areas and character/line image areas included in the image to be printed, and generating memory allocation ratio information based on a ratio of the predicted coded data amounts for the respective printing color components coded by said coding means and notifying the printing apparatus of the memory allocation ratio information”.

Kawamoto relates to a system in which (see Fig. 4) image data from an image processing unit 50 is stored in a 4-line FIFO 54-1, encoded by an encoding unit 54-2, and stored in memory 54-4. In addition, image data stored in memory 54-4 is decoded, by means of a decoding unit 54-5.

Applicant submits, however, that nothing in *Kawamoto* would teach or suggest the notification means of Claim 1. Nothing in the *Kawamoto* system is seen to suggest “predicting coded data amounts for the respective printing color components based on [a] table designated by [] designation means and the sizes of halftone image areas and character/line image areas included in the image to be printed”, as recited in Claim 1, much less generating memory allocation ratio information based on a ratio of such predicted coded data amounts or conveying the resulting memory allocation ratio information to a printing apparatus, as is also recited in Claim 1. For these reasons, therefore, Applicant believes that Claim 1 is allowable over *Kawamoto*.

Even assuming *Horiuchi* shows all that it is cited for, and assuming for argument's sake that the proposed combination of that patent with *Kawamoto* is a permissible one, the result of the proposed combination would not contain or suggest the notification means recited in Claim 1, and therefore, Applicant believes that Claim 1 is allowable over those two patents, taken separately or in any proper combination (if any).

Independent Claims 6, 8 and 12 each contain recitations like that of the notification means in Claim 1, and are each believed to be patentable for at least the same reasons as discussed above in connection with Claim 1. In addition, independent Claim 14 is a method claim corresponding to system Claim 1, and is believed to be allowable for those same reasons.

A review of the other art of record has failed to reveal anything which, in Applicant's opinion, would remedy the deficiencies of the art discussed above, as a reference against the independent claims herein. Those claims are therefore believed patentable over the art of record.

The other claims in this application are each dependent from one or another of the independent claims discussed above and are therefore believed patentable for the same reasons. Since each dependent claim is also deemed to define an additional aspect of the invention, however, the individual reconsideration of the patentability of each on its own merits is respectfully requested.

In view of the foregoing amendments and remarks, Applicant respectfully requests favorable reconsideration and allowance of the present application.

Applicant's undersigned attorney may be reached in our New York Office by telephone at (212) 218-2100. All correspondence should continue to be directed to our address listed below.

Respectfully submitted,

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